Does the Co-creation of Service Recovery Create Value for Customers? The Underlying Mechanism of Motivation and the Role of Operant Resources

Abstract

This study focuses on the underlying mechanism that leads to co-recovery behaviour and favourable co-created value as response to a service failure. It argues that consumers' ability to integrate their operant resources (e.g. knowledge and skills) to co-recover from a service failure motivates them to express higher value co-recovery in-role behaviour and hence enjoy higher hedonic and utilitarian values. To test this claim, our study investigates the impact of consumers' ability to co-recover on value co-recovery in-role behaviour by taking into account extrinsic and intrinsic motivation as mediators. The results reveal that extrinsic motivation only partially mediates the relationship between ability to co-recover and value co-recovery in-role behaviour. Furthermore, the outcomes demonstrate that value co-recovery in-role behaviour increases utilitarian value but decreases hedonic value.

Keywords: co-creation, service recovery, motivation, operant resources, consumers

Introduction

The services marketing literature (e.g. Parasuraman, Zeithaml and Berry, 1985; Smith, Bolton and Wagner, 1999; Maxham and Netemeyer, 2002; Harris, Mohr, Bernhardt, 2006; Dong, Kumar, Evans and Zou, 2016; Park and Ha, 2016; Balaji et al., 2018) has demonstrated that service delivery, failure, and recovery determine service patronage and profitability. The nature of services (e.g. dependence on customer cooperation) and the interactive nature of service encounters occasionally may lead to failures and situations demanding recovery (Sparks, 2001). Despite the importance of service failures and service recovery, to date little research has focused on the service recovery context from the perspective of value co-creation (see Dong et al., 2008; Roggeveen et al., 2012; Heidenreich et al., 2015; Xu et al., 2014a,b; Guo et al., 2016), which in the service failure-recovery context could be referred to as value co-recovery. Customers' participation in service recovery has been found to influence satisfaction with the service recovery process, perceived value of future co-creation, intentions regarding future participation (Dong et al. 2008), perceived justice (Xu et al. 2014b) and relationship-based self-esteem (Guo et al. 2016). However, the positive influence of customer participation exists only when customer did not cause or was a part of the failure (Roggeveen et al. 2012; Heidenreich et al. 2015).

As the studies above illustrate, the existing research has mostly focused on the consequences of co-creation in service recovery and has paid almost no attention to the antecedents of co-recovery behaviour. For that reason, this research aims to understand the underlying processes that lead to co-recovery behaviour and thus to co-created value (both hedonic and utilitarian).

In practical terms, consumers engage in the co-recovery process with the service provider by explaining what they want from the service provider in the case of a service failure recovery and interact with employees by giving appropriate information and answers to employees' service-

related questions and act courteously with employees as a means of establishing a strong rapport. For example, suppose that a consumer buys a computer from a local store without having the software for Windows installed. Later, he/she goes home and tries to install Windows on the device but fails repeatedly. In order to solve his/her problem, the customer may turn to the firm's webpage on Google on his/her smartphone to obtain information about how to resolve the problem. At the same time, during the resolution of the problem he/she may call the shop where he/she bought the device and get in touch with a technician to fix the problem. While speaking with the technician, the customer may explain all the steps he/she went through. Moreover, the consumer may opt to be friendly, kind, polite, and courteous in order to co-create a solution with the employees. While they are having a conversation over the phone, the customer should at least be able to use the same technical jargon as the service providers' technician and respond correctly to the instructions given by the technical support team while performing certain reinstallation tasks (such as finding a switch or plugging in a cable). As can be seen from the example above, a consumer may display different forms of behaviour during recovery; therefore, understanding the motives for engagement in co-creation in-role behaviour is an important issue if we want to enhance customers' motivation (Bolton and Saxena-Iyer, 2009).

As the example above suggests, customers need to have a certain level of ability to integrate their knowledge and skills into the recovery process in order to able to get the most value out of both party's efforts for recovery. This emphasis is also present in the notion of S-D logic that claims that the utilisation of skills and knowledge (i.e. operant resources) are the foundations upon which value is co-created (Lusch and Vargo, 2014; Vargo and Lusch, 2017). Vargo and Lusch (2004, 2008) argue that in order to prosper companies should adopt a Service-Dominant Logic (S-D logic) which will lead them to shift from a firm-centric view towards a customer-centric

view in the delivery of service(s) since such an orientation will prompt firms to acknowledge the fact that customers are influential in value creation in multiple ways. According to S-D logic, firms and customers co-create value together through the collaborative use of resources (Vargo and Lusch, 2004, 2008, 2017). In that line of thinking, the customer is no longer a passive recipient but a co-creator of value (Vargo and Lusch, 2008) who is actively engaged in resource integration activities. These two premises of S-D logic highlight the importance of concurrent resource allocation (i.e. knowledge and skills) and customer engagement, which are crucial for a successful service encounter that engenders value co-creation for the customer and the firm.

The example above also brings out that consumers should be activated to engage in co-recovery behaviour. Cognitive Evaluation Theory (CET) (Deci and Ryan, 1985) posits that if tasks to be done are attractive enough, individuals are motivated to perform various behaviours. Similarly, Expectancy Theory (Vroom, 1964; Oliver, 1974) suggests that people are motivated if they expect to perform well in order to get the rewards that are valuable for them. In other words, the attractiveness of tasks is assessed on the basis whether they are likely to satisfy the need for personal development via feeling of achievement or mere joy (intrinsic reward) (Meuter et al., 2005; Le Bon and Merunka, 2006), as well as via having access to more resources that would support self-interests in life (extrinsic reward) (Dabholkar, 1996). Accordingly, in the context of service recovery, it is argued that when a customer feels that he/she is able to align his/her knowledge and skills with the service providers' during the recovery, he/she will be intrinsically and extrinsically motivated to act together with the service provider (co-recovery in-role behaviour) as to benefit from the co-created value (hedonic and utilitarian).

Overall, this study extends the Expectancy Theory (Vroom, 1964; Oliver, 1974) into the service recovery context and claims that motivational mechanisms underpin the engagement in co-

recovery in-role behaviour. This study adds to the services literature by developing a dual process model that posits customers' extrinsic and intrinsic motivation as the two psychological mediators of the relationship between the ability to co-recover and consumer value co-recovery in-role behaviour. Furthermore, it asserts that the consumers' ability to co-recover (operant resources) is one of the antecedents of this motivational process. By this assertion, it aims to demonstrate the applicability of S-D logic view into the service recovery contexts. It builds its claim on the premises that individuals are active participants of service recovery and value creation (Vargo and Lusch, 2008).

Conceptual Framework

In S-D logic, value is a central concept and it is always co-created with customers (Vargo and Lusch, 2016; 2017). For that reason, it is seen as being the outcome of use, consumption, or experience, i.e. the outcome of an evaluative judgment (Hilton et al., 2012). S-D logic posits that value is not delivered or created solely by firms (Vargo and Akaka, 2009) but rather is always co-created jointly and reciprocally by all of the actors involved in resource-integration processes (Vargo et al., 2008). This view is translated into service recovery that firms cannot create or deliver the higher possible value hen they just focused on the output through recovery strategies after a service failure; rather, higher value is co-created when both firms and customers participate as resource integrators. In other words, according to this view service recovery value co-creation (value co-recovery) is relational and thus requires a process orientation rather than an output approach. The outcome of such processes is the actors' assessment of value in their respective contexts (Edvardsson, Skålén, and Tronvoll, 2012). Earlier literature supports the idea that two value dimensions (utilitarian and hedonic) capture the outcomes of experience (Zhuang et al., 2014) or the outcomes of consumption (Babin et al., 1994, cited in Park and Ha, 2016). By

building on this notion in the literature, S-D logic proposes that the hedonic and utilitarian aspects of consumption for value co-creation (e.g. Risch-Rodie and Schultz Kleine, 2000) are the outcome of a service experience which is unique to the individual. The utilitarian value of co-recovery relates to consumers' evaluations of the efficiency and usefulness of a co-recovery, while the hedonic value of co-recovery refers to consumers' evaluations of how socially or emotionally meaningful the co-recovery was (Park and Ha, 2016). It should also be noted here that value co-creation in-role behaviour has been identified as being an antecedent of value creation (Revilla-Camacho et al., 2015; Mustak et al., 2013; Chan et al., 2010), an idea that our model takes up as well.

Our co-recovery behaviour construct builds on Yi and Gong's work (2013), which emphasises that value co-creation behaviour is a two-dimensional construct consisting of customer value in-role (customer participation) and extra-role (customer citizenship) behaviour (Groth, 2005; Yi, Nataraajan, & Gong, 2011; Yi and Gong, 2013). In-role behaviours are those required for value co-creation, while extra-role behaviours are voluntary behaviours that provide extraordinary value to the firm or other consumers. For instance, co-recovery in-role behaviour takes place when a consumer follows the service provider's guidelines during recovery, whereas extra-role behaviour mostly occurs when a consumer disseminates positive word-of-mouth for a service provider after a successful service recovery is over. Yi and Gong (2013) argue that in the service recovery context, in-role behaviour concerns the immediate reactions of the customer and service provider by means of which they need to seek out and share information while also displaying responsible forms of behaviour and interacting with each other at the time of the incident. However, extra-role behaviour is in general oriented towards future responses (Dewett and Denisi, 2007). It constitutes reactions after a certain amount of time has passed following the

incident when the provider is no longer present. When one of the actors does not co-exist, co-work opportunities do not arise for either party and hence there is no co-recovery of value. Since this study focuses on the immediate occurrence of service recoveries and therefore the co-creation of value, it does not take into account future behaviour (i.e. extra-role behaviour).

In this study, we define value co-recovery in-role behaviour as the totality of consumer behaviours which are required for successful value co-recovery at the time of the incident such as the seeking and sharing of information, responsible behaviour, and personal interactions. Information seeking includes consumers eliciting information from other consumers and/or employees related to the co-recovery process in order to perform their tasks. Consumers seek out information about how to perform their tasks, including what they are expected to do and how they are expected to perform during a co-recovery process. Information sharing refers to the provision of the information needed for use in the value co-recovery process between employees and consumers. For example, consumers provide accurate information concerning what they want, and responsible behaviour emerges when customers understand their duties and responsibilities during the co-recovery process. In this way, consumers perform all the tasks that are required during service interactions about which they have been informed. Lastly, personal interactions are those that occur between consumers and employees, such as passing on passenger details while checking in for a flight.

From an S-D logic perspective, service failures can be defined as situations in which value is lower than expected because of the ineffective use of operand (e.g. tools or devices to be used) or operant resources (e.g. skills and knowledge). In other words, if one's static and tangible resources (operand resources) are not made available, intangible and dynamic resources (operant resources) (Lusch and Vargo, 2014) cannot be utilized to create benefits. Similarly, service

recovery is a resource integration process that is carried out after a service failure with the objective of recovering value to the greatest extent possible. Having and effectively using operand and operant resources is critical for service recovery processes. However, operant resources are more crucial in service recovery because they are dynamic and act upon static operand resources with the aim of producing favourable experiences and solving problems (Vargo and Lusch, 2004; Vargo and Lush, 2008; Madhavaram and Hunt, 2008). For that reason, this study primarily explores the role of ability to co-recover. By drawing upon a definition of skills (know-how) built up through knowledge and the ability to interact successfully in one's environment (Purvis and Purvis, 2012), this study posits that the ability to co-recover requires that one have the skills and knowledge that are needed for interacting with service providers to co-create a solution.

Key underlying theories

We draw on expectancy theory (Vroom 1964) to explore the impact of consumers' ability to co-recover on co-recovery in-role behaviour and consumer perceived value through extrinsic and intrinsic motivation (Figure 1). Expectancy theory (Vroom, 1964) explains the processes that prompt people to engage in various types of behaviour based on their expectations (Oliver, 1974). It suggests that motivation is a function of the following three components: expectancy, instrumentality, and valence (Tyagi, 1985; Vroom, 1964). Expectancy refers to an individual's perception that effort leads to successful performance, instrumentality concerns a person's expectations about specific performance-driven rewards, and valence refers to the degree to which an individual values a particular reward. Motivation can be both extrinsic and intrinsic (Tyagi, 1985; Meuter et al., 2005). Extrinsic motivation refers to behaviour that is driven by

extrinsic benefits (Dabholkar, 1996) such as money, price, and discounts, whereas intrinsic motivation is based on personal factors (Le Bon and Merunka, 2006) such as feelings of accomplishment, prestige, personal growth, and mere pleasure derived from engaging in an activity (Meuter et al., 2005).

INSERT HERE FIGURE 1

The psychological process proposed by our model is motivational in nature (Le Bon and Merunka, 2006) and it is thereby assumed that the ability to co-recover can play either an intrinsic or extrinsic motivational role. The ability to co-recover requires the use of operant resources (Lusch et al., 2007) which stimulate the fulfilment of basic inner needs during the co-recovery process such as the need for confidence in skills and/or worthwhile accomplishment (Meuter et al., 2005) as well as the feeling of independent and/or innovative interaction with a service provider. Moreover, the ability to co-recover may ensure a quicker recovery, which is an external gain for consumers because operant resources are instrumental in achieving co-recovery goals such as more control over the recovery process and/or the preferred recovery. If individuals are able to use their own capacities and qualifications (operant resources) in finding a solution, they will obtain the internal reward of feeling capable (hedonic value) and the external reward of achieving a quicker recovery (utilitarian value). In other words, since the knowledge and skills that consumers possess increase the likelihood of being successful in achieving their preferred solutions (Lush and Vargo, 2014), it is likely that a quicker recovery will be completed successfully and hence co-recovery in-role behaviour will be exhibited. In either case, whether it be acquired through the fulfilment of basic needs or the achievement of task goals, the ability to

co-recover leads to participative behaviour (Yi and Gong, 2013), while the absence of those elements evokes a weaker attitude regarding co-recovery in-role behaviour.

Hypotheses

Motivation and consumer value co-recovery in-role behaviour

For a service recovery context grounded in expectancy theory (Vroom 1964, Oliver, 1974), we suggest that consumers will be motivated to engage in a co-recovery process if they believe that their input will lead to a specific mode of performance (expectancy). By reaching the preferred type of recovery, they will get inner and outer rewards (instrumentality) that they want to acquire (valence). This interpretation of expectancy theory echoes the ideas put forth in a study carried out by Roberts, Hughes and Kertbo (2014) in which it was argued that motivation precedes participation since the expectation of attaining a benefit (in their study, innovation) prompts engagement in co-creation activities. Similarly, this paper claims that co-recovery is another expression of participatory behaviour which is driven by the expectation of achieving a better recovery that is built upon the intrinsic motivation of self-fulfilment as well as the extrinsic motivation of problem-solving task completion. Co-recovery as participant behaviour requires that consumers co-allocate their personal resources (i.e. the ability to co-recover), especially their operant resources (e.g. knowledge and skills) during co-recovery (Payne et al., 2008; Storbacka et al., 2012). Both the service provider and consumers should have certain skills and knowledge if they want to solve the crisis at hand. For example, if a consumer is unable to connect to Wi-Fi in the office and calls a service provider, he or she should at least be able to use the same technical jargon as the service providers' technical support team to describe the problem for a quick and accurate solution. In other words, when the technical support team member asks the customer to perform certain tasks (such as finding a switch or plugging in a cable), he/she should understand

what is being requested. If customers believe that being able to integrate their resources (e.g. knowledge and skills) into a recovery attempt will lead to a better recovery experience, they may perceive some valuable external and internal benefits. For instance, customers can be extrinsically motivated to arrive at the preferred solution to their problem or to attain a quicker recovery. Similarly, they also may be intrinsically motivated to feel the fulfilment of a worthwhile accomplishment or independence during the co-recovery process. It is expected that both of those motivators lead customers to express more value co-recovery in-role behaviour (e.g. looking for additional information about how to solve a problem). In other words, consumers will be willing to integrate their own resources into the service experience if the aim is to obtain a valued outcome from the expected performance. Drawing on these arguments, we assert that:

H1a.When consumers' extrinsic motivation increases, they will exhibit more value co-recovery in-role behaviour.

H1b. When consumers' intrinsic motivation increases, they will exhibit more value co-recovery in-role behaviour.

The ability to co-recover and consumer value co-recovery in-role behaviour

Studies about co-creation (e.g. Dellande et al., 2004; Meuter et al., 2005; Dong et al., 2008; Ramaswamy and Ozcan, 2018) have noted that it is necessary to have certain resources (e.g. skills and knowledge) to exhibit value co-creation in-role behaviour (Yi, 2014) since having those resources supports the expectation of attaining desired benefits (Dellande et al., 2004; Lusch et al., 2007). Roberts, Hughes, and Kertbo (2014) assert that if consumers believe that certain rewards are obtainable, they are more likely to engage in co-creation activities. Similarly,

in a service recovery context it is assumed that able customers are more likely to exhibit value co-recovery in-role behaviour than customers without such abilities because lack of skills and knowledge may dissuade them from taking participant action and make them prefer to remain as a passive receiver of the service provider's solution so they can avoid undesirable results. In other words, if someone believes that he/she does not have the knowledge or skills required for a certain task, they may be reluctant to be a part of an experience out of fear of having to deal with a negative outcome (Higgins, 1997). By drawing on expectancy theory (Vroom, 1964; Oliver, 1974), we argue that in such situations consumers will not be able foresee any valuable internal (e.g. a feeling of accomplishment) or external rewards (e.g. quick recovery). If they cannot presume the existence of a potential reward (whether internal or external), they will not be able to have any expectations for a successful recovery. For instance, consumers who do not know the technical terminology for computing or networking cannot perform a successful exchange of information with customer service providers to identify a problem and come up with a solution. However, if they have the knowledge and skills (ability to co-recover) needed to be able to benefit from internal and external gains, they will be motivated to engage in participant behaviour (value co-recovery in role behaviour). Therefore, we expect that:

H2. When consumers are better able to co-recover, they will exhibit more value co-recovery in-role behaviour.

The marketing literature indicates that ability positively affects motivation (Dellande et al., 2004; Lusch et al., 2007) since it increases the chance of getting potential rewards and decreases the possibility of failures. Skills and knowledge (i.e. ability) can provide a safety net for accomplishing the ultimate psychological goal of failure minimisation and reward maximisation

(Higgins, 1997). Cognitive Evaluation Theory (CET) (Deci and Ryan, 1985) argues that individuals have an impetus or are motivated to do certain tasks if those tasks are attractive enough. That attractiveness is dependent on the opportunities they bring about in the exercising of one's abilities (intrinsic rewards) as well as on the new resources they would provide (expected external rewards) to further enhance their competences (Deci and Ryan, 1985): "Interpersonal events and structures that conduce towards feelings of competence during action can enhance intrinsic motivation for that action since they allow satisfaction of the basic psychological need for competence" (Ryan and Deci, 2000: 58). Moreover, an environment of interaction promises access to new knowledge and skills that can be used to improve one's abilities and hence avoid negative consequences (Ryan and Deci, 2000). An increased sense of being able to exercise and develop personal competences (abilities) influences customers' motivation as regards their willingness to participate in the co-production process, and for that reason they increase the value that is co-created (Lusch and Vargo, 2014). Even if customers are motivated, if they lack the required ability they are not likely to engage in customer value co-creation via in-role behaviour (Gruen et al., 2007; Yi, 2014). As CET asserts, if individuals do not believe that they are able to carry out a certain task, they will not be prompted to act or feel driven to take part; in other words, they will not be motivated to take action or engage in any form of productive behaviour (Deci and Ryan, 1985). Furthermore, the participation of customers with limited abilities in processes may result in accidental misuse of resources and may lead to co-destruction (Plé and Chumpitaz-Cáceres, 2010), which will then require recovery. By drawing on expectancy theory (Vroom, 1964; Oliver, 1974), in a co-recovery context it can be argued that customers who have the necessary skills and knowledge to engage in a value co-recovery process may feel more motivated to demonstrate in-role behaviour. They will be more likely to assess whether they can attain an expected outcome (i.e. recovery) than those with a limited amount of

ability. Such a belief in goal attainability can motivate them to perform certain tasks together with a service provider since they can assume valuable rewards which can either be intrinsic (e.g. a feeling of achievement) and/or extrinsic (e.g. a preferred recovery). Thus, we make the following hypothesis:

H3. A customers' level of ability influences a) extrinsic and b) intrinsic motivation.

Empirical research has shown that motivation is not only able to explain consumers' behavioural effort (Meuter et al., 2005; Le Bon and Merunka, 2006) but also mediate between managerial or consumer-related variables and that effort. This study claims that consumers' ability to co-recover provides the grounds upon which they can create their expectation of a successful performance regarding service recovery. Having the necessary skills and knowledge increases individuals' chance of enjoying benefits and avoiding painful outcomes (Higgins, 1997). For that reason, they can envisage future rewards since having certain abilities helps them calculate the possibility of attaining an expected outcome, as expectancy theory claims (Oliver, 1974; Vroom, 1964). Like the study carried out by Roberts, Hughes, and Kertbo (2014), which argues that motivation precedes participation because taking part in co-creation activities is triggered by the expectation of attaining benefits, this study proposes that when consumers have the required knowledge and skills, they will be more likely to seek out intrinsic (e.g. a feeling of achievement) and extrinsic rewards (e.g. a preferred recovery) and hence will be more willing to express value co-recovery in-role behaviour. In brief, we claim that in a co-recovery context a consumer's motivation mediates his/her ability to co-recover and engage in value co-recovery in-role behaviour.

H4. The relationship between the level of the ability to co-recover (ability to integrate knowledge and skills) and value co-recovery in-role behaviour will be mediated by a) extrinsic motivation and b) intrinsic motivation.

The consequences of value co-recovery in-role behaviour

Earlier studies have identified customer value in-role behaviour as the source of value creation (Revilla-Camacho et al., 2015) and value perception (Chan et al., 2010; Mustak et al., 2013). As mentioned above S-D logic confirms the dual-dimensionality of co-creation value (Park and Ha, 2016) as being utilitarian and hedonic. This is because value in S-D logic is perceived as the outcome of experience (Hilton et al., 2012) and any experience produces both hedonic and utilitarian value (Zhuang et al., 2014). Utilitarian value refers to needs which are tasked-related and hedonic value is concerns the affective gratification derived from the service attribute (Dhar et al., 2008). In co-recovery, utilitarian value refers to a customer's assessment of how efficiently the tasks for co-recovery are handled in the process of achieving the goals at hand, while hedonic value involves the customer's appreciation of intrinsic, emotional, and social rewards (e.g. enjoyment and pleasure) (Park and Ha, 2016).

The literature on co-creation suggests that consumer participation in the co-creation process can reduce the physical, performance, psychological, and financial risks associated with imperfect services (Zhuang et al., 2014). In a similar vein, Park and Ha (2016) argue that co-recovery reduces the uncertainty of recovery outcomes and hence the possibility of the physical, psychological, and financial harm associated with mismatching recoveries. During co-recovery, by participating in the process consumers may feel that they are more in control and consequently

they can personally respond to such risks by assuming a role in the process of value creation. When they perform their tasks well, they increase utilitarian value (Zhuang et al., 2014).

In co-recovery, since hedonic value emerges when a company and its customers work together in a polite, respectful manner to create a solution (Park and Ha, 2016), consumers perceive psychological benefits such as happiness or pleasure. This is because when the interactions between the actors proceed smoothly in the co-recovery process, recovery can be seen as being enjoyable and pleasant (Park and Ha, 2016). Thus, the co-recovery process in itself paves the way for happiness, pleasantness, and excitement.

Although earlier research has suggested that participation can help consumers obtain greater utilitarian (Dowling and Staelin, 1994) and hedonic value (Zhuang et al., 2014) and a recent study by Park and Ha (2016) demonstrates that the creation of both values during a service recovery leads to positive outcomes (i.e. repurchase intention via equity and affect), it is not yet known whether or not customer value co-recovery in-role behaviour leads to higher levels of value creation in a recovery context. In this study, we predict that in-role co-recovery behaviour will generate greater utilitarian and hedonic values because a feeling of fulfilment created through interactions with employees, information sharing, and displaying responsible behaviour as a part of in-role behaviour helps consumers secure more co-recovered value which better suits their needs. For that reason, we posit the following hypothesis:

H5. A higher level of customer value co-recovery in-role behaviour leads to greater a) utilitarian value and b) hedonic value during the co-recovery process.

Furthermore, apart from its impact on how customers actually participate in co-creation, consumer ability influences the amount of value that can be created (Risch-Rodie and Schultz Kleine, 2000). General ability represents knowledge, skills, or experience that produce value for any actor who makes use of them (Holcomb et al., 2009). In service co-recovery, value co-creation depends on actors' abilities to cooperate with others. In other words, a consumer's ability to use his/her skills and knowledge for interacting with the service providers to co-create a solution defines how effectively the resources of the other party will blend with his/her so that both parties will construe value. Thus, ability (to co-recover) as an operant resource can be a source of insight into more effective combinations, enabling consumers to create value by using resources more effectively (Holcomb et al., 2009). Similarly, it is expected that if ability influences value co-creation, it also can influence the type and amount of value perceived by consumers during co-recovery. In the present study, this means that customers' ability to co-recover affects the amount of utilitarian and hedonic value, and hence it is proposed that:

H6. As the level of customer ability to co-recover increases, the consumer will perceive greater
a) utilitarian value and b) hedonic value.

Methodology

This study used an exploratory mixed methods approach (Creswell, 2015). Mixed method research has increased in importance (Todd et al., 2004) because it can improve the accuracy of researchers' judgments through the collection of various kinds of data bearing on the same phenomenon (Jick, 1979), and the results are more robust and compelling than single method studies (Davis et al., 2011). Specifically, exploratory designs are valuable for identifying relevant

variables and exploring their relationships (Creswell, 2015; Harrison and Reilly, 2011). It is for those reasons that we developed our conceptual model on the basis of insights gathered from both qualitative in-depth interviews with consumers and theory located in related research.

Qualitative study: In-depth interviews

The research objective was to discover the nature of consumer value co-recovery in-role behaviour within a service failure context and develop an understanding of the factors that enable or constrain consumers in participation in a service recovery. For that reason, the research questions needed to gauge what kind of value co-creation activities in a service recovery context occur within the context of a service failure. Our twenty-seven in-depth interviews helped elicit the variables that are relevant and of importance for consumers and helped ensure that key variables were not overlooked. A snowballing and convenience selection of cases that had involved problems in the last six months was used. The interviews were conducted until information redundancy was achieved (Lincoln and Guba, 1985). Each interview commenced with general small talk to warm up the interviewee and ease him/her into the discussion. Interviews ranged in length from 40 to 60 minutes.

The data acquired from the interviews was analysed through the use of the line by line approach (Van Manen, 1990), with which the researcher "looks at every single sentence and asks, 'What does this sentence or sentence reveal about the phenomenon or experience being described?'" (Van Manen, 1990, p. 93). In this way, statements were grouped together to identify themes of content. With this process, the researcher can assess the reliability of the qualitative data (McCracken, 1988). Subsequently, statements related to the respondents' modes of participating with firms in resolving service failures and their reactions and motivation were carefully

highlighted. The researchers generated distinctive statements for content categorization, and based on the results of the interviews, the proposed factors related to consumer value co-recovery in-role behaviour appeared in the data, which warranted a subsequent step in further research using the survey.

Three dimensions emerged with regards to co-recovery in-role behaviour: information sharing, responsible behaviour, and personal interaction. In terms of information sharing, respondents highlighted the importance of giving employees the information that is needed: *"... I explained to them what I did. Probably I made a mistake"* (Steve) and answering employees' questions so that they can perform their tasks: *"I explained to reception that I didn't want to leave my room unlocked, even if the hotel's employees were there. I proposed to them that they transfer me to another room"* (Bill). Forms of responsible behaviour emerged in different sub-dimensions, such as following employees' instructions and performing all the necessary tasks. As one of the participants said: *"They told me that I should bring the telephone to the company's store and I had to wait for a week. I thought that when you purchase a new product and it doesn't work, companies would replace it immediately. Still, I accepted the company's excuse and I waited"* (Ryan). The issue of personal interaction came up several times in the interviews: *"In the beginning you should be polite and wait to see if the service provider gives you an appropriate response, and then wait for the solution…"* (John).

The role of ability in co-recovering as an antecedent of this model is illustrated in the following quotes: *"If I'd had the knowledge, I would've offered suggestions about what the service provider should do, but I didn't."* (Bill); *"I would've fixed it myself if I had the knowledge or I would've found another technician to fix it. But it was unfair, it wasn't my fault and it was the company's responsibility to fix it."* (Diana); *"Although I have a fair amount of knowledge about*

computers, I decided to go to customer service with a friend of mine who is an expert. In that way I'd be able to better explain what happened and understand what the employee explained to me" (George).

The dimensions of expectancy theory appeared as a clear antecedent of co-recovery in-role behaviour. The role of valence was clearly apparent in the interviews, and instrumentality emerged as well, along with expectancy. For example, the concept of valence stands out in the following statements: *"I paid for the service, so we had to find a solution"* (Nicole); *"During that period, the problem was so pressing that we needed a telephone connection, so I did whatever was necessary to fix the problem"* (Carl). Another participant said: *"I was sure that even with the new flight booking, it was very possible that I'd miss my long haul flight, so I explained to the employees that I needed another itinerary"* (Antonia). All of those statements clearly demonstrate the role of instrumentality. The following statement is also particularly indicative of that role: *"If I'd had the technical knowledge to fix the problem with the internet, I would have done it myself. But I was afraid that I wouldn't be able to successfully solve the problem"* (Peter).

Quantitative study: Survey

An online survey was administered via Amazon Mechanical Turk (hereafter MTurk), a relatively new platform that has been employed by numerous researchers owing to its high-quality reliable infrastructure (Buhrmester et al., 2011). All of the participants were residents of the United States, and they received a payment of $1 for an estimated 10-minute task once the researchers decided they were suitable candidates for the questionnaire. The survey filtered respondents who had recently (i.e. within the past 6 months) complained to a service provider (e.g. bank, airline,

hotel) about an aspect of the service they had received and then attempted to solve the problem. After that initial question, respondents were asked a second question ("When did the dissatisfying experience occur?") and then a third question ("Briefly describe the problem you encountered"), and they were also asked a filter question concerning the online survey for screening purposes to ensure that only those respondents who experienced a service failure in the previous 6 months participated in the study. The survey generated 953 responses in total. In order to avoid potentially misleading responses when collecting data on Mechanical Turk (MTurk), the following measures were put into place to ensure data quality (Paolacci et al., 2010). First, to obtain high quality responses, the sample was drawn from subjects with an acceptance rate that was equal to or greater than 90% who had previously completed at least 50 HITs (Human Intelligence Tasks) in MTurk. Second, workers who failed to submit their MTurk IDs at the end of the survey were screened out. Third, all of the respondents who completed the HIT in less than 3 minutes were rejected, as their rapid response was indicative of poor quality time allocation for the survey. Lastly, cases with incomplete responses and those that did not provide adequate answers to the filtering questions mentioned above were removed. This strict screening process resulted in a final sample of 740 informants. The sample was almost evenly distributed by gender (53.4% female and the remainder male). The average age was 35.5, and the majority of the respondents were employed full-time (65.8%). Less than half had a bachelor's degree (40.3%).

Ability to co-recover was measured by four items adopted and adapted from Meuter et al. (2000). Measurements of extrinsic and intrinsic motivation were based on the three components of expectancy theory: expectancy (3 items), instrumentality (5 items), and valence (5 items) (Meuter et al., 2005). Consumer value co-recovery in-role behaviour was measured by adapting Yi and Gong's (2013) value co-creation behaviour scale. Utilitarian value and hedonic value were

measured with 10 items adapted from Park and Ha (2016). The measurement items used in this study are presented in the Appendix. SPSS 20 and AMOS 20 statistical packages were used for the data analysis.

Results

The following procedures suggested by Podsakoff, MacKenzie, Lee, and Podsakoff (2003) helped reduce the common method bias: (1) The variable and dimension names were excluded in the survey; (2) The respondents were anonymous and they were assured that there were no right or wrong answers to the questions asked; and (3) Harman's single-factor test was used (Podsakoff et al., 2003). The factor analysis resulted in twelve factors with Eigenvalues greater than 1, which explain 72.19% of the total variance. The first factor resulted in 21.61% of the variance (less than 50%), which confirms the non-existence of common method bias (Podsakoff and Organ, 1986). Given that Harman's single factor has received some criticism (Podsakoff et al., 2003), we used an additional test. Following the procedure described by Liang, Saraf, Hu and Xue (2007), a new factor (the method factor) was introduced in the research model. Our results demonstrated that the average substantively explained variance of the indicators was 0.81 and revealed an average method-based variance of 0.002. The ratio of substantive variance to method variance was approximately 405:1. In addition, none of the method factor loadings were significant. Therefore, the common method bias is unlikely to be a cause of serious concern for this study.

In order to ensure the theoretical factor and construct structures as well as to test the hypotheses, three main steps were carried out: First, exploratory factor analysis (EFA) was used to determine the underlying dimensionality of co-recovery in-role behaviour, motivation, and ability to co-

recover. Following that, a two-stage analysis was performed as suggested by Anderson and Gerbing (1988). Accordingly, first a confirmatory factory analysis (CFA) was run to examine the measurement model of the constructs and later, the structural equation model was tested to assess the hypotheses posited above.

First, since the co-creation in-role behaviour scale by Yi and Gong (2013) was adapted for the context of the study, it was subjected to exploratory factor analysis (EFA) using the Promax oblique rotation method. The EFA highlights three factors explaining 74.5% of the variance. The data satisfied the factor analysis assumptions; the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was ideal at 0.900, and Bartlett's test of sphericity was significant ($\chi 2$ (150) = 10145.100, $p< 0.001$). The factorial structure was similar to that of Yi and Gong's original 2013 scale. However, three items which have shown cross-loadings whose value exceeded 0.32 (Tabachnick and Fidell, 2013) (i.e., "I asked others for information about how I can solve the problem", "I searched for information about how I can solve the problem", and "I paid attention to how others have tried to solve the problem") were removed. Those items belong to the same construct—namely, information seeking. That construct includes questions about information-seeking for the service recovery process by consulting other customers. However, this study focuses on service recoveries between employees and consumers so in this case consumers seek out information from employees not from other customers, which justifies the removal of those items. Moreover, before removing those elements we showed them to five expert judges to ensure that they do not lead to any loss in the face and content validity (indicator reliability), and they concluded those items could be removed. Lastly, previous research also supports this elimination (e.g. Revilla-Camacho et al., 2015; Navarro et al., 2016) in various contexts.

The extrinsic and intrinsic motivation constructs were subjected to another EFA analysis (n=740). This was considered important because the scale items had been modified to suit the context of the study. The EFA result of extrinsic motivation was a three-factor solution explaining 81.6% of the total variance with a KMO of 0.897 and Barlett's test of sphericity of highly significant ($p < 0.001$). Similarly, an EFA was conducted on the intrinsic motivation scale items, too. The findings of this step revealed a Kaiser–Meyer–Olkin (KMO) value of 0.908 and a significant Bartlett's test of sphericity ($p < 0.001$). Furthermore, a Promax rotation revealed three underlying constructs that explained 82.5 % of the variance. The factorial structure was similar to that of Meuter et al.'s original 2005 scale. A final EFA was conducted to ensure the unidimensionality of the construct *ability* in the co-recovery context. The KMO index was 0.831, and Bartlett's test of sphericity was significant at a level of 0.05, forecasting a good analysis. Only one factor with Eigenvalues greater than 1 appeared, explaining 73.407% of the variance.

After carrying out the exploratory factor analyses (EFA), we used the two-step approach (measurement model and structural model) to conduct a confirmatory factor analysis (CFA) and test the relationships among the constructs (Anderson and Gerbing, 1988). The standardized CFA loadings, R^2, and the corresponding t statistics are presented in Table 1.

INSERT HERE TABLE 1

Customer value co-recovery in-role behaviour resulted in three dimensions of information sharing, responsible behaviour, and personal interaction. The second order model for this construct also fits the data well (GFI = 0.96; CFI = 0.98; TLI = 0.98; RMSEA = 0.05). The

composite reliabilities of each dimension were between 0.90 and 0.94, and their average extracted variances (AVE) were between 0.70 and 0.78.

With regards to motivation, we followed the approach of Tyagi (1985) and Meuter et al.' s (2005). Those dimensions consist of expectancy, instrumentality, and valence for both extrinsic and intrinsic motivation. The CFA results for extrinsic motivation indicated that the model fits the data closely (GFI = 0.93; CFI = 0.97; TLI = 0.96; RMSEA =0.07). The CFA results for intrinsic motivation indicated a good fit (GFI = 0.95; CFI = 0.97; TLI = 0.97; RMSEA = 0.06). The three dimensions for extrinsic motivation had reliabilities between 0.91 and 0.95, and their average extracted variances ranged between 0.68 and 0.82. The same dimensions for intrinsic motivation had reliabilities between 0.93 and 0.94, and their average extracted variances were between 0.73 and 0.81. After these assessments, the three components of motivation (expectancy, instrumentality, and valence) were computed to arrive at a single score of extrinsic and intrinsic motivation. Expectancy theory's conceptualization of motivation (Vroom, 1964) suggests that individuals expect rewards that both support their self (e.g. a feeling of accomplishment) and self-interest (e.g. getting a discount) (Vroom, 1964; Oliver, 1974; Dabholkar, 1996). It argues that multiplicative measures indicate an overall intrinsic and extrinsic motivation levels (Vroom, 1964) so that these two constructs should be calculated as a single score (the calculation of expectancy, instrumentality and valence for intrinsic and extrinsic rewards separately) (See Meuter et al., 2005) as is the case in this study.

A last measurement model was run for the constructs, which are ability to co-recover, hedonic value, utilitarian value, and customer co-recovery in-role behaviour. This measurement model showed a good fit ($\chi 2$ (262) = 598.985, $p < 0.001$; $\chi 2$ /df = 2.286; CFI = 0.981; TLI = 0.978; NFI = 0.966; GFI = 0.938; AGFI = 0.924; RMSEA = 0.042; and SRMR = 0.05).

The standardized CFA loadings for all of the scale items exceeded the minimum loading of 0.50 and the composite reliabilities of all factors were above 0.70 (Hair, Black, Babin, and Anderson, 2010). In addition, the average variance-extracted values were higher than the threshold value of 0.50 (Muthen, 1994). Therefore, the scales used for the present study had high convergent validity (Fornell and Larcker, 1981). The square roots of the AVEs (see diagonal cells in Table 2) were compared to the absolute values of the correlations. The former indicator exceeded the latter in each case (see Table 2), which proved the discriminant validity (Hair et al., 2010). A correlation matrix with means, standard deviations, reliabilities, and correlations among variables can be seen in Table 3.

INSERT HERE TABLE 2

INSERT HERE TABLE 3

Model fit and hypothesis testing

As suggested by Anderson and Gerbing (1988), after checking the validity of the measurement models with CFA, the structural model was tested to assess the proposed hypotheses. The model testing revealed a good fit with the data ($\chi2$ (373) = 899.021, $p < 0.001$; $\chi2$ /df = 2.410; SRMR = 0.066; CFI = 0.972; TLI = 0.967; GFI = 0.922; AGFI = 0.903; and RMSEA = 0.044). Most of the hypotheses were supported (Table 4).

The results show that the ability to co-recover has a significant and positive effect on extrinsic motivation (β=0.597, p<0.001), intrinsic motivation (β=0.502, p<0.001), value co-recovery in-role behaviour (β=0.132, p<0.01), utilitarian value (β=0.497, p<0.001), and hedonic value, (β=0.323, p<0.001) (H2, H3a, H3b, H6a and H6b supported) (See Table 4). As regards the effects of extrinsic and intrinsic motivation on value co-recovery in-role behaviour, it was found that

extrinsic motivation has a positive impact on value co-recovery in-role behaviour (β=0.426, p<0.001) (H1a supported). The results indicated that intrinsic motivation has a significantly negative effect on value co-recovery in-role behaviour (β=−0.220, p<0.001). This outcome highlights the fact that, as per H1b, there is a relationship between the level of intrinsic motivation and expressions of value co-recovery in-role behaviour. However, the relationship is the opposite of what is stated in H1b (See Table 4). The data shows that as consumers' extrinsic motivation increases, they will be less likely to express value co-recovery in-role behaviour. The analysis output also indicates that value co-recovery in-role behaviour positively influences utilitarian value (β=0.182, p<0.001) (H5a supported) (See Table 4). Furthermore, it was found that value co-recovery in-role behaviour has a significant effect on hedonic value (β=−0.346, p<0.001) (H5b supported) but also a negative one which is the opposite of what is stated in H5b (See Table 4).

INSERT HERE TABLE 4

Mediation analysis

We performed a bootstrapping analysis with 2000 samples, bias-corrected 95%, and indirect, direct, and total estimates of path coefficients (Zhao, Kong and Wang, 2012). We examined the two-tailed significance of the indirect effect of the ability to co-recover on consumer value co-recovery in-role behaviour via extrinsic motivation and intrinsic motivation. While the indirect effect of the former was significant on the latter via extrinsic motivation (p = 0.001) (H4a supported), it was not significant through intrinsic motivation (p = 0.129) (H4b not supported) (See Table 5).

INSERT HERE TABLE 5

Control variables

Following earlier studies (e.g. Auh et al., 2007; Vega-Vazquez et al., 2013), gender, age, and education were controlled regarding customer motivation to participate as well as value co-creation. The analysis revealed that age influences three variables in the model, whereas gender only influences one. Specifically, age has a negative impact on intrinsic motivation (β=−0.073, p<0.05) and hedonic value (β=−0.122, p<0.001), meaning that older consumers hold to a more utilitarian perspective about the co-recovery process. Moreover, older consumers exhibit more in-role behaviour (β=0.114, p<0.01), likely because they need more interaction with the service provider and take longer to use technology to find and share information. This is consistent with previous studies (Daley and O'Gara, 1998) since young consumers are more energetic and demanding than elderly consumers in terms of recovery efforts (Cambra-Fierro et al., 2011). With regards to gender, women appear to engage more in in-role co-recovery behaviour (β=−0.218, p<0.001). This reflects the result of previous studies which have pointed out that women are more sociable and empathic and therefore may have better communication skills than men (Deery, Iverson, and Walsh, 2002). Education was not found to have a significant effect on the other variables (See Table 4).

Discussion

First, in terms of the co-recovery context this study confirms some results and arguments that have already been presented regarding co-creation settings. Customers are more likely to engage in co-recovery in-role behaviour when they have the ability to do so, as has been seen in the case of non-service failure settings (Yi, 2014). In addition, consumers' ability to co-recover positively affects extrinsic motivation, which is positively related to co-recovery in-role behaviour. These

findings are in line with earlier research (Dellande et al., 2004; Lusch et al., 2007) which suggests that ability is an important determinant of motivation.

However, some of the results of this paper stand in contrast to the positive effects of co-creation demonstrated in previous studies on non-service recovery (e.g. Yi and Gong, 2013). Although we have we found that the ability to co-recover increases intrinsic motivation, surprisingly the latter decreases consumer value co-recovery in-role behaviour. A possible explanation for this finding is that negative feelings tend to overwhelm cognition in recovery situations (Smith and Bolton, 2002). For that reason, the pleasure derived from a co-recovery process, as has been suggested in previous studies (e.g. Park and Ha, 2016), was found to decrease. In non-recovery situations, intrinsic motivation arises from interest in or the enjoyment of completing or performing a task (Ryan and Deci, 2000). However, during service failures consumers are forced to find a solution to their problems and thus further interaction with service providers is not always desirable. This outcome calls for further investigation. A framework for this investigation could possibly be found in the literature on brand communities which notes that consumers can be loyal to a brand but not the company that owns the brand (Healy and McDonagh 2013). In several cases it was found that consumers invested a great amount of resources to solve problems and keep the brand alive even without collaboration with the company (Muniz and Schau, 2005).

Third, another intriguing finding was the negative effect of co-recovery in-role behaviour on hedonic value. Pires et al. (2015) argue that customers may evaluate their participation in the co-creation process positively or negatively depending on the levels of co-creation before the failure (Heidenreich et al., 2015). That negative effect can be explained by collaborative inertia (see Hibbert and Huxham 2005), which may occur when co-creation is ineffective. If that happens, progress becomes slow and painful, and eventually it may decrease customer hedonic value. A

solution to that problem could be high role clarity with regards to the co-recovery process (Hibbert and Huxham 2005). In the same vein, contrary to the idea that co-creation has beneficial aspects, some authors (e.g. Zwick et al., 2008; Cova and Dalli, 2009; Arvidsson, 2005, 2006) argue that co-creation can be perceived as a form of customer exploitation. In a service recovery process, a "working consumer" may feel that his/her participation in value co-recovery is actually a form of exploitation carried out by the service provider. This perception of exploitation can be exacerbated if the service failure is the company's fault. Thus, "working" consumers may not derive any hedonic value from co-recovery because they feel that the company took advantage of their contribution in order to solve the problem.

Theoretical implications

To the best of our knowledge, this study is the first of its kind to examine the factors that contribute to value co-creation in a service recovery context. Thus, from a theoretical perspective, this research extends the literature on co-creation in service recovery in several ways.

First, this study has shown that co-revocery behaviour has a motivational mechanism. Although previous studies have used expectancy theory to explain recovery actions (Zhu et al., 2013), they only assessed the expectancy aspect. However, Vroom's theory (1964) suggests that motivation consists not only of expectancy but also valence and instrumentality. Consumers who have been affected by a service failure should perceive co-recovery as being useful and necessary in terms of achieving the outcome they desire (instrumentality). Furthermore, that outcome should be quite important for them (high valence) if they are going to actively engage in co-recovery behaviour (valence). For instance, during the interviews one of the participants said, *"Even though I complained to the bank, I didn't seek out any further information... Probably it wasn't*

so important, as the additional charge wasn't so high" (Olga) and another said, "*The internet is important for my work, so it was necessary to find a solution. Therefore I tried to follow all the instructions given by the service provider"* (Nick). A critical theoretical implication of this study concerns its investigation into the various dimensions of motivation in the service recovery context.

Second, previous studies treated customer co-creation in service recovery as a one-dimensional construct. By drawing on the S-D logic literature, we add to this perspective and extend the earlier studies (e.g. Dong et al., 2008; Roggeveen et al., 2012) by shifting the co-creation in-role behaviour construct of Yi and Gong (2013) to the service recovery context. We treat it as a multi-dimensional construct (second order factor) by showing that consumers co-recover through information sharing, responsible behaviour, and personal interaction. Our treatment of co-recovery in-role behaviour as a co-creation in-role behaviour after a service failure (by sharing the same dimensions) is based on the work of Xu et al. (2014b) who argued that customers are also resource integrators in a service recovery context as they are involved in service delivery.

This represents a major contribution to the literature on complaint management, which has focused less on the customer behaviour during service recovery process but rather more on the importance of service provider attentiveness (Davidow, 2000), employees' competences, friendliness and active listening skills (Gruber, Szmigin and Voss, 2009). The resolution of complaints and service failure is a process of communication that involves two parties with critical forms of co-recovery behaviour. Our findings indicate that the consumer's ability to integrate their operant resources (i.e. knowledge and skills) during co-recovery as a form of complaint resolution is at least as important in the creation of value as those of the service

provider. Accordingly, it could be argued that complaint management should be redefined as a resource integration process of both parties (i.e. the customer and the provider).

Third, this is the first study employing an S-D logic framework which shows that in-role behaviour affects co-created value (hedonic or utilitarian). Although there has been much discussion about participation and value co-creation, we empirically show that in a service recovery context in-role behaviour either increases or decreases co-created value.

Managerial implications

Our findings have important implications for managers as well as consumers trying to find solutions after service failures. First, service providers should engage in co-recovery with consumers who have high levels of ability regarding services, processes, and product technology. Otherwise, forcing consumers who do not have the necessary resources will lead to lower value extraction. This finding suggests that for low-ability co-recover customers, timely assistance through a firm recovery may be better received, while engaging high-ability customers in joint co-recovery may be more appropriate. Service managers should measure customers' technical and psychological skill sets as they relate to the service type and offer different or customised types of co-recovery in cases of service failures. The airline industry could be a good example to illustrate the situation. Nowadays, all airline companies demand that customers do several steps in the service process alone using various forms of technology (e.g. for checking in). However, there are consumers who are not very competent with new technologies so they may face difficulties or even service failures. If the company insists that such consumers co-recover, there is a major risk they will get lower hedonic or utilitarian value or even experience double deviation service failures.

Another important managerial implication could be derived from the negative impact of intrinsic motivation on co-recovery regardless of the positive impact of ability to co-recover on intrinsic motivation. First of all, service managers should not attempt to engage with all customers in the co-recovery process. Obligatory engagement in co-recovery may lead to lower levels of value, especially for consumers with high intrinsic motivation. Service companies should provide alternatives to co-recovery that take into consideration not only customers' ability to co-recover, as suggested in the previous paragraph, but also their intrinsic motivation to participate in the co-recovery process. Thus, service managers should gauge customers' feelings of accomplishment, prestige, personal growth, and the pleasure derived from engaging in an activity when they attempt to group them into the various segments of service recovery.

The last managerial implication of this study is related to the role of employees who are responsible for service recoveries. Given that in-role co-recovery behaviour is mainly a process of communication (information sharing, responsible behaviour, and personal interaction), we suggest that the success of co-recovery also depends on the acquisition, assimilation, transformation, and exploitation capabilities of the service provider (Berger, Möslein, Piller, and Reichwald, 2005). Service providers should train their employees so they can obtain the necessary information about what consumers want from a service recovery (acquisition), as well as be more flexible about recovery options (assimilation). Furthermore, co-recovery is a learning opportunity which offers access to a rich stream of information that makes it possible for the service provider to re-design the routines and flexibility of service recovery. A periodic measurement of consumer value co-recovery in-role behaviour could help managers track changes over time, and the dimensions of co-recovery can also help managers develop appropriate employee training programs designed to improve customers' understanding of the

behaviour involved in the value co-recovery process (Yi and Gong, 2013). However, most companies do not consider customer service to be a primary value activity and many outsource it to other firms, resulting in an inflexible recovery that is almost impossible to co-create. Overall, companies should reconsider the reasons for their existence and understand that being able to offer an effective and efficient co-recovery process represents a dynamic capability (Pitelis and Teece, 2009) that adds value for customers and creates learning opportunities.

Limitations and future research

This research expands on the literature about S-D logic regarding the service recovery context by considering how operant resources contribute to co-recovery behaviour through specific mechanisms and discussing how value is assessed through recovery behaviour. While there are several limitations to this study, those limitations nonetheless offer interesting avenues for further research in the field. First, this study applies the expectancy theory of motivation in a co-recovery context. Although the ability to co-recover was found to have an impact on motivation to co-recover, the individual and situational factors that affect motivation in service recovery remain unexplored. For instance, when consumers are loyal to a brand or part of the brand community (Healy and McDonagh, 2013), they might exhibit more co-recovery behaviour with the service provider or brand community.

Second, as Xu et al. (2014b) have noted, resource integration in service recovery is always context-specific and experiential. Thus, understanding the context-specific factors that affect co-recovery behaviour could provide fruitful insights. Internal blame could possibly be a moderator in some relations of the model. For instance, failures of co-created products and services can lead to a higher attribution of blame for other parties (such as retailers) or customers as well (Berger et

al., 2005). Furthermore, role clarity could influence the impact of ability on in-role co-recovery behaviour. These are issues that needs further investigation.

Third, previous research suggests that different types of service failures affect customers' reactions in varying ways (Smith and Bolton, 2002). In this study, we did not specify the type of failure but further research could consider how failure types affect both motivation to co-recover and co-recovery in-role behaviour. Moreover, we focused on immediate reactions that occur during recoveries. Although the potential of co-recovery may be reduced when the parties stop communicating after a given incident, there may still be opportunities to bring them back together to co-create value during post-recovery in the future, and that may become manifest in various forms of extra-role behaviour.

Fourth, a replication of our study in different service settings would increase the generalizability of our findings. Fifth, categories of emotions (e.g. positive feelings of involvement) and their impact on co-recovery in-role behaviour could be examined. Last but not least, the current study does not investigate the co-recovery behaviour of service providers, which has a major impact on consumer co-recovery behaviour and overall on the success of co-recovery. A future study should investigate the impact of service providers' capabilities in terms of acquisition and assimilation, as have been conceptualised by Berger et al. (2005). Despite these shortcomings, this research broadens our understanding of the factors that contribute to co-created value as well as how and when customers engage in co-recovery in-role behaviour. Our study thus builds upon previous research regarding the roles of customers as value co-creators and, in a parallel way, opens up avenues for future research in the field.

References

Anderson, James. C., and David W. Gerbing, 1988. "Structural equation modeling in practice: A review and recommended two-step approach". *Psychological Bulletin*, 103(3): 411-423.

Arvidsson, Adam, 2005. "Brands: A Critical Perspective". *Journal of Consumer Culture*, 5(2): 235-259.

Arvidsson, Adam, 2006, Brands: Meaning and Value in Media Culture, London: Routledge.

Auh, Seigyoung, Simon J. Bell, Colin S. McLeod, and Eric Shih, 2007. "Co-production and customer loyalty in financial services". *Journal of Retailing,* 83(3): 359-370.

Balaji, M.S, Subhash Jhab, Aditi Sarkar Senguptac, and Balaji C. Krishnand, 2018. "Are cynical customers satisfied differently? Role of negative inferred motive and customer participation in service recovery". *Journal of Business Research*, 86(May):109-118

Berger, Christoph, Kathrin Möslein, Frank Piller and Ralf Reichwald, 2005. "Co-designing modes of cooperation at the customer interface: Learning from exploratory research". *European Management Review*, 2(1):170-167.

Bolton, Ruth N. and Shruti Saxena-Iyer, 2009. "Interactive services: A framework, synthesis and research directions". *Journal of Interactive Marketing*, 23(1): 91-104.

Buhrmester, Michael, Tracy Kwang and Samuel D. Gosling, 2011. "Amazon's mechanical Turk: A new source of inexpensive, yet high-quality, data?" *Perspectives on Psychological Science*, 6(1): 3-5.

Cambra-Fierro, Jesús, Juan M. Berbel-Pineda, Rocío Ruiz-Benítez, and Rosario Vazquez Carrasco, 2011. "Managing service recovery processes: The role of customers' age". *Journal of Business Economics and Management*, 12 (3): 503-528.

Chan, Kimmy, Wa, Chi Kin Yim and Simon S.K. Lam, 2010. "Is customer participation in value creation a double-edged sword? Evidence from professional financial services across cultures". *Journal of Marketing*, 74(2): 48-64.

Cova, Bernard and Daniele Dalli, 2009. "Working consumers: The next step in marketing theory?" *Marketing Theory*, 9(3): 315-339.

Creswell, John W. 2015, A concise introduction to mixed methods research, Thousand Oaks, CA: Sage Publishing.

Dabholkar, Pratibha A., 1996. "Consumer evaluations of new technology based self-service options: An Investigation of alternative models of service quality". *International Journal of Research in Marketing*, 13 (1): 29-51.

Daley Amanda and Ann O' Gara, 1998. "Age, gender and motivation for participation in extracurricular physical activities in secondary school adolescents". *European Physical Education Review,* 4 (1): 47-53.

Davidow, Moshe, 2000. "The Bottom Line Impact of Organizational Responses to Customer Complaints". *Journal of Hospitality & Tourism Research*, 24(4): 473-490.

Davis, Donna F., Susan L. Golicic and Courtney N. Boerstler, 2011. "Benefits and challenges of conducting multiple methods research in marketing". *Journal of the Academy of Marketing Science*, 39 (3): 467-479.

Dhar, U., Nath, V.V., Nair, S.K., and Yadav, P. K., 2008, New Age Marketing: Emerging Realities, New Delhi: Excel Books.

Roberts, Deborah, Mathew Hughes, and Kia Kertbo, 2014. "Exploring consumers' motivations to engage in innovation through co-creation activities". *European Journal of Marketing*, 48(1/2): 147-169.

Deci, Edward L. and Richard. M. Ryan, 1985, Intrinsic motivation and self-determination in human behaviour, New York: Plenum.

Deery, Stephen, Roderick Iverson and Janet Walsh, 2002. "Work relationships in telephone call centers: Understanding emotional exhaustion and employee withdrawal". *Journal of Management Studies,* 39 (4): 471-496.

Dellande, Stephanie, Mary C. Gilly, and John L. Graham, 2004. "Gaining compliance and losing weight: The role of the service provider in health care services". *Journal of Marketing*, 68 (3): 78-91.

Dewett, Todd and Angelo S. Denisi, 2007. "What motivates organizational citizenship behaviours? Exploring the role of regulatory focus theory". *European Journal of Work and Organizational Psychology*, 16(3): 241–260.

Dong, Bebei, Kenneth R. Evans and Shaoming Zou, 2008. "The effects of customer participation in co-created service recovery". *Journal of the Academy of Marketing Science*, 36(1): 123-137.

Dong, Bebei, Kumar Sivakumar, Kenneth R. Evans and Shaoming Zou, 2016. "Recovering coproduced service failures: Antecedents, consequences, and moderators of locus of recovery". *Journal of Service Research*, 19(3) 291-306.

Dowling, Grahame R. and Richard Staelin, 1994, "A model of Perceived Risk and Intended Risk-handling Activity". *Journal of Consumer Research*, 21 (1): 119-34.

Edvardsson, Bo, Per Skålén and Bård Tronvoll, 2012. "Service systems as a foundation for resource integration and value co-creation", in Stephen L. Vargo, Robert F. Lusch (ed.) (special issue) *Toward a Better Understanding of the Role of Value in Markets and Marketing* (*Review of Marketing Research*, Volume 9). Emerald Group Publishing Limited, pp. 79-126.

Fornell, Claes and David F. Larcker, 1981. "Evaluating structural equation models with unobservable variables and measurement errors". *Journal of Marketing Research*, 18(1): 39-50.

Groth, Markus, 2005. "Customers as good soldiers: examining citizenship behaviors in internet service deliveries". *Journal of Management,* 31(1): 7–27.

Gruben, Thorsten, Isabelle Szmigin and Roediger Voss, 2010. "The Desired Qualities of Customer Contact Employees in Complaint Handling Encounters". *Journal of Marketing Management,* 22(5-6): 619-642.

Gruen, Thomas. W., Talai Osmonbekov, T., and Andrew J. Czaplewski, 2007. "Customer-to-customer exchange: Its MOA antecedents and its impact on value creation and loyalty". *Journal of the Academy of Marketing Science*, 35(4): 537-549.

Guo, Lin, Sherry L. Lotz, Chuanyi Tang, Tomas W. Gruen, 2016. "The role of perceived control in customer value cocreation and service recovery evaluation". *Journal of Service Research*, 19(1): 39-56.

Hair, Joseph F., William C. Black, Barry J. Babin, and Rolph E. Anderson, 2010, Multivariate Data Analysis, Essex: Pearson.

Harris, Katherine E., Lois A. Mohr and Kenneth L. Bernhardt, 2006. “Online service failure, consumer attributions and expectations”. *Journal of Services Marketing*, 20 (7): 453-458.

Harrison, Robert L. and Timothy, M. Reilly, (2011). “Mixed methods designs in marketing research". *Qualitative Market Research: An International Journal*, 14(1): 7-26.

Healy, Jason C., and Pierre McDonagh, 2013. “Consumer roles in brand culture and value co-creation in virtual communities”. *Journal of Business Research*, 66(9): 1528-1540.

Heidenreich, Sven, Kristina Wittkowski, Matthias Handrich and Tomas Falk, 2015. “The dark side of customer co-creation: Exploring the consequences of failed co-created services”. *Journal of the Academy of Marketing Science*, 43(3): 279-296.

Hibbert, Paul and Chris Huxham, 2005. “A little about the mystery: Process learning as collaboration evolves”. *European Management Review*, 2(1): 59-69.

Higgins, Edward Torry, 1997. “Beyond pleasure and pain”. *American Psychologist*, 52: 1280-1300.

Hilton, Toni, Tim Hughes and David Chalcraft, 2012. “Service co-creation and value realisation”. *Journal of Marketing Management,* 28:13-14.

Holcomb, Tim R., R. Michael Holmes Jr., and Brian L. Connelly, 2009. “Making the Most of What You Have: Managerial Ability as a Source of Resource Value Creation”. *Strategic Management Journal,* 30(5):457-485.

Jick, Todd D., 1979. “Mixing qualitative and quantitative methods: Triangulation in action”. *Administrative Science Quarterly,* 24 (4): 602-611.

Le Bon, Joël and Dwight Merunka, 2006. “The impact of individual and managerial factors on salespeople’s contribution to marketing intelligence activities”. *International Journal of Research in Marketing*, 23(4): 395-408.

Liang, Huigang, Nilesh Saraf, Qing Hu and Yajiong Xue, 2007. “Assimilation of Enterprise Systems: The Effect of Institutional Pressures and the Mediating Role of Top Management”. *MIS Quarterly*, 31(1): 59-87.

Lincoln, Yvonna S. and Egon E. Guba, 1985, Naturalistic Enquiry, Beverly Hills, CA: Sage.

Lusch, Robert F., and Stephen L. Vargo, 2014, Service-Dominant Logic Premises, Perspectives, Possibilities, Cambridge Press.

Lusch, Robert F., Stephen L. Vargo, and Matthew O’Brien, 2007. “Competing through service: Insights from Service-dominant logic”. *Journal of Retailing,* 83(1): 5-18.

Madhavaram, Sreedhar and Shelby D. Hunt, 2008. “The service-dominant logic and a hierarchy of operant resources: Developing masterful operant resources and implications for marketing strategy”. *Journal of the Academy of Marketing Science*, 36(1): 67-82.

Maxham III, James G. and Richard G. Netemeyer, 2002. “A longitudinal study of complaining customers' evaluations of multiple service failures and recovery efforts”. *Journal of Marketing*, 66(4): 57-71.

McCracken, Grant D., 1988, The long interview, Thousand Oaks, CA: Sage.

Meuter, Matthew L., Amy L. Ostrom, Robert I., Roundtree and Mary Jo Bitner, 2000. "Self-service technologies: Understanding customer satisfaction with technology-based service encounters". *Journal of Marketing*, 64(3): 50-64.

Meuter, Matthew L., Mary Jo Bitner, Amy L. Ostrom and Stephen W. Brown, 2005. "Choosing among alternative service delivery modes: An investigation of customer trial of self-service technologies". *Journal of Marketing*, 69(2): 61-83.

Muniz, A. M., and Hope J. Schau, 2005. "Religiosity in the abandoned Apple Newton brand community". *Journal of Consumer Research*, 31(4): 737-747.

Mustak, Mekhail, Elina Jaakkola and Aino Halinen, 2013. "Customer participation and value creation: A systematic review and research implications". *Managing Service Quality: An International Journal*, 23(4): 341-359.

Muthen, Bengt, O., 1994. "Multilevel covariance structure analysis". *Sociological Methods & Research*, 22(3): 376-398.

Navarro, Susana, Carmen Llinares and Dolores Garzon, 2016. "Exploring the relationship between co-creation and satisfaction using QCA". *Journal of Business Research,* 69 (4): 1336-1339.

Oliver, Richard L., 1974. "Expectancy theory predictions of salesmen's performance". *Journal of Marketing Research,* 11 (3): 243-253.

Paolacci, Gabriele, Jesse Chandler and Panagiotis G. Ipeirotis, 2010. "Running experiments on Amazon Mechanical Turk". *Judgment and Decision Making*, 5(5): 411-419.

Parasuraman, A, Valarie A Zeithaml, Leonard L Berry 1985. “A Conceptual Model of Service Quality and Its Implications for Future Research”. *Journal of Marketing*, 49(4): 41-50.

Park, Joohyung and Sejin Ha, 2016. “Co-creation of service recovery: Utilitarian and hedonic value and post-recovery responses”. *Journal of Retailing and Consumer Services*, 28: 310-316.

Payne, Adrian F., Kaj Storbacka and Pennie Frow, 2008. “Managing the co-creation of value”. *Journal of the Academy of Marketing Science*, 36(1): 83-96.

Pires, Guilherme D., Alison Dean and Muqqadas Rehman, 2015. “Using service logic to redefine exchange in terms of customer and supplier participation”. *Journal of Business Research*, 68(5): 925-932.

Pitelis, Christos N. and David J. Teece, 2009. “The (new) nature and essence of the firm”. *European Management Review*, 6(1): 5-15.

Plé, Loïc and Rubén Chumpitaz Cáceres, 2010. “Not always co-creation: Introducing interactional co-destruction of value in service-dominant logic”. *Journal of Services Marketing*, 24(6): 430-437.

Podsakoff, Philip M. and Dennis W. Organ, 1986. “Self-reports in organizational research: Problems and prospects”. *Journal of Management*, 12(4): 531-544.

Podsakoff, Philip M., Scott B. MacKenzie, Joeng-Yeon Lee and Nathan Podsakoff, 2003. “Common method biases in behavioural research: A critical review of the literature and recommended remedies”. *Journal of Applied Psychology*, 88(5): 879-903.

Purvis, Martin K. and Maryam A. Purvis, 2012. "Institutional expertise in the service-dominant logic: Knowing how and knowing what". *Journal of Marketing Management*, 28(13-14): 1626-1641.

Ramaswamy, Venkat and Kerimcan Ozcan, 2018. "What is Co-Creation? An Interactional Creation Framework and its Implications for Value Creation". *Journal of Business Research*, 84 (March), 193-205.

Revilla-Camacho María Ángeles, Manuela Vega-Vázquez and Francisco José Cossío-Silva, 2015. "Customer participation and citizenship behaviour effects on turnover intention". *Journal of Business Research*, 68(7): 1607-1611.

Risch-Rodie, Amy and Susan Schultz Kleine, 2000. "Customer participation in services production and delivery", in Handbook of services marketing and management, Teresa A. Swartz and Dawn Iacobucci (Eds.), Thousand Oaks, CA: Sage, pp. 111-125.

Roggeveen, Anne, L., Michael Tsiros and Dhruv Grewal, 2012. "Understanding the co-creation effect: When does collaborating with customers provide a lift to service recovery?" *Journal of the Academy of Marketing Science,* 40(6): 771-790.

Ryan, Richard. M. and Edward L. Deci, 2000. "Intrinsic and extrinsic motivations: Classic definitions and new directions". *Contemporary Educational Psychology*, 25(1): 54-67.

Smith, Amy K., Ruth N. Bolton and Wagner, A. Janet (1999), "Model of customer satisfaction with service encounters involving failure and recovery". *Journal of Marketing Research*, 36(3): 356-372.

Smith, Amy K. and Ruth N. Bolton, 2002. “The effect of customers’ emotional responses to service failures on their recovery effort evaluations and satisfaction judgments”. *Journal of the Academy of Marketing Science,* 30(1): 5-23.

Sparks, Beverley, 2001. “Managing service failure through recovery”. in: Jay Kandampully, Connie Mok and Beverly Sparks (Eds), Service quality management in hospitality, tourism and leisure (pp. 193–219). New York: Haworth.

Storbacka, Kaj., Pennie Frow, Suvi Nenonen, and Andrian Payne, 2012. “ Designing business models for value Co-creation”. In L. Stephen, Vargo, F. Robert, & Lusch (Eds.), Special issue – Toward a better understanding of the role of value in markets and marketing (Vol. 9) (pp. 51–78). Review of Marketing Research.

Tabachnick, B. G., and Linda S. Fidell, 2013, Using multivariate statistics, 6th ed, Boston: Pearson.

Todd, Zazie, Brigitte Nerlich, Suzanne McKeown and David D. Clarke, 2004, The integration of qualitative and quantitative methods in theory and practice, New York: Psychology Press.

Tyagi, Pradeep K., 1985. “Relative importance of key job dimensions and leadership behaviours in motivating salesperson work performance”. *Journal of Marketing*, 49(3): 76-86.

Van Manen, Max, 1990, Researching lived experience, New York: The State University of New York.

Vargo, Stephen L. and Archpru Akaka, 2009. “Service-dominant logic as a foundation for service science: Clarifications”. *Service Science*, 1(1): 32-41.

Vargo, Stephen L. and Robert F. Lusch, 2004. “Evolving to a new dominant logic for marketing”. *Journal of Marketing*, 68(1): 1-17.

Vargo, Stephen L. and Robert F. Lusch, 2008. “Service-dominant logic: Continuing the evolution”. *Journal of the Academy of Marketing Science*, 36(1): 1-10.

Vargo, Stephen L. and Robert F. Lusch, 2016. “Institutions and axioms: an extension and update of service-dominant logic”. *Journal of the Academy of Marketing Science,*44:5-23.

Vargo, Stephen L. and Robert F. Lusch, 2017. “Service-Dominant Logic 2025”. *International Journal of Research in Marketing*, 34 (1), 46–67.

Vargo, Stephen L., Paul, P. Maglio and Melissa Archpru Akaka, 2008. “On value and value co-creation: A service systems and service logic perspective”. *European Management Journal,* 26(3): 145-152.

Vega-Vazquez, Manuela, María Ángeles Revilla-Camacho and Francisco J. Cossío-Silva, 2013. “The Value Co-Creation Process as a Determinant of Customer Satisfaction”. *Management Decision*, 51(10): 1945-1953.

Vroom, Victor H., 1964, Work and Motivation*,* New York: John Wiley & Sons.

Xu, Yingzi, Bård Tronvoll and Bo Edvardsson, 2014b. “Recovering service failure through resource integration”. *The Service Industries Journal*, 34(16): 1253-1271.

Xu, Yingzi, Roger Marshall, Bo Edvardsson and Bård Tronvoll, 2014a. “Show you care: Initiating co-creation in service recovery”. *Journal of Service Management*, 25(3), 368-387.

Yi Youjae, Rajan Nataraajan, and Taeshik Gong, 2011. "Customer participation and citizenship behavioral influences on employee performance, satisfaction, commitment, and turnover intention". *Journal of Business Research*, 64(1): 87–95.

Yi Youjae and Taeshik Gong, 2013. "Customer value co-creation behaviour: Scale development and validation". *Journal of Business Research*, 66 (9): 1279-1284.

Yi, Youjae, 2014, Customer value creation behaviour, London, Routledge.

Zhao, Jingjing, Feng Kong and Yonghui Wang, 2012. "Self-esteem and humor style as mediators of the effects of shyness on loneliness among Chinese college students". *Personality and Individual Differences*, 52(6): 686-690.

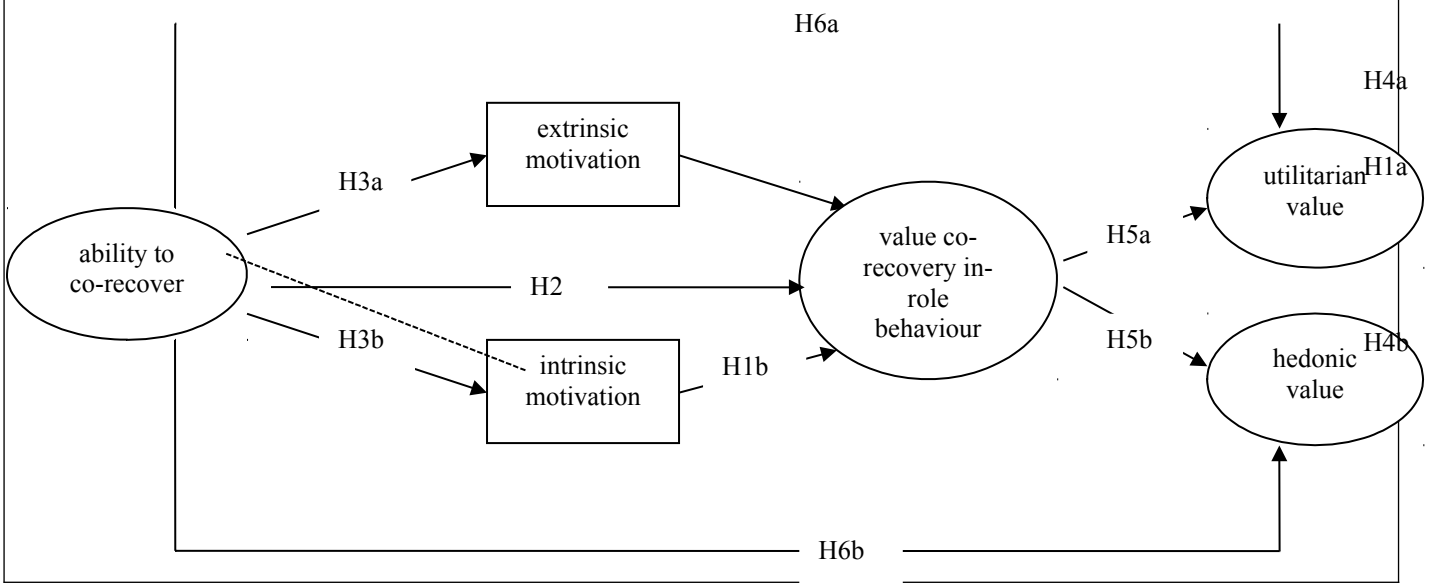
Zhu, Zhen, Cheryl Nakata, K. Sivakumar and Dhruv Grewal, 2013. "Fix it or leave it? Customer recovery from self-service technology failures". *Journal of Retailing*, 89(1): 15-29.

Zhuang, Weiling, Barry Babin and Joanne Tran (2004), "Does Co- Creation Always Produce Values: An Experimental Study," *Journal of Selling*, 14(2), 30- 42.

Zwick, Detlev, Samuel K. Bonsu and Aron Darmody, 2008. "Putting consumers to work: 'Cocreation' and new marketing govern-mentality". *Journal of Consumer Culture*, 8(2): 163-196.

Tables and Figures

Figure 1. Theoretical framework of value co-recovery in-role behaviour.



Note: The solid lines are direct effects and the dotted lines are mediation effects.

Table. 1 Measurement model

Constructs/items	Standardized loading	R^2	t value
Ability to co-recover			
I was fully capable of participating in finding a solution to my complaint.	.836	.698	25.008***
I was confident in my ability to find a solution with the service provider.	.831	.691	24.864***
Participating more in finding a solution to my complaint was well within the scope of my abilities.	.816	.665	
My past experiences increased my confidence that I was able to successfully participate more in finding a solution to my complaint.	.730	.533	21.168***
Co-recovery in-role behaviour			
Information sharing			
I gave the employee proper information.	.869	.754	34.760***
I provided the necessary information so that the employee could perform his or her duties.	.924	.853	
I answered all the employee's service related questions.	.863	.745	34.331***
Responsible behaviour			
I performed all the tasks that were required.	.900	.810	35.423***
I adequately exhibited all the expected forms of behaviour.	.903	.816	
I fulfilled my responsibilities to the business.	.800	.640	28.501***
I followed the employee's instructions.	.747	.557	24.126***
Personal interaction			
I was friendly to the employee.	.861	.741	38.182***
I was kind to the employee.	.894	.799	42.718***
I was polite to the employee.	.943	.890	
I was courteous to the employee.	.954	.910	53.610***
I didn't act rudely to the employee.	.775	.601	29.824***
Utilitarian Value			
Effective	.860	.740	30.143***
Helpful	.911	.829	32.594***
Functional	.865	.748	
Practical	.705	.498	24.759***
Hedonic Value			
Fun	.923	.852	47.139***
Exciting	.916	.839	45.870***
Delightful	.938	.880	50.153***
Thrilling	.936	.876	
Enjoyable	.922	.849	46.899***

Table 2. Constructs, composite reliability, and discriminant validity

	CR	AVE	M	SD	1	2	3	4
1. Ability to co-recover	0.880	0.647	19.78	5.32	**0.804**			
2. Hedonic value	0.968	0.859	12.9	8.12	0.186	**0.927**		
3. Utilitarian value	0.904	0.704	20.69	5.41	0.529	0.256	**0.839**	
4. Co-recovery in-role behaviour	0.829	0.626	69.94	11.02	0.289	-0.268	0.350	**0.792**

Note: CR=composite reliability, AVE=average variances extracted; the diagonal cells are the square root of the AVE for each construct.

Table 3. Means, standard deviations, reliabilities, and correlations among variables

Variable	Mean	Standard Deviation	1	2	3	4	5	6
1. Ability to co-recover	19.78	5.32	.87					
2. Intrinsic motivation	58.89	15.75	.43**	.93				
3. Extrinsic motivation	67.16	13.52	.57**	.67**	.91			
4. Co-recovery	69.94	11.02	.24**	.15**	.39**	.93		
5. Utilitarian value	20.69	5.41	.47**	.36**	.44**	.36**	.90	
6. Hedonic value	12.90	8.12	.17**	.28**	.01	-.15**	.23**	.96

*p< .05. **p< .01.

Notes: We report means and standard deviations on the basis of a seven-point scale (except utilitarian and hedonic values of co-creation of service recovery which we measured using a 5-item, 7-point semantic differential scale). Reliabilities (Cronbach's alpha) are reported along the diagonal.

Table 4. The results of the structural equation modelling (SEM)

Hypotheses		Path Coefficient (*β*)	Direction predicted	std. err.	t-value
H1a	Extrinsic motivation →value co-recovery behaviour (CR)	.426	+	.04	6.118***
H1b	Intrinsic motivation →value co-recovery behaviour (CR)	-.220	-	.04	-3.637***
H3a	Ability (AB)→extrinsic motivation	.597	+	.02	16.672***
H3b	Ability (AB) →intrinsic motivation	.502	+	.02	13.590***
H2	AB→ value co-recovery behaviour (CR)	.132	+	.02	2.622**
H5b	CR→hedonic value	-.346	-	.10	-7.382***
H5a	CR→utilitarian value	.182	+	.07	4.432***
H6a	AB→utilitarian value	.497	+	.04	12.366***
H6b	AB→hedonic value	.323	+	.05	8.043***
Control Variables					
	Age→intrinsic motivation	-.073			-2.209*
	Age→extrinsic motivation	.019			.614
	Age→value co-recovery behaviour (CR)	.114			3.056**
	Age→hedonic value	-.122			-3.443***
	Age→utilitarian value	.024			.732
	Education→intrinsic motivation	-.013			-.400
	Education→extrinsic motivation	.039			1.291
	Education→value co-recovery behaviour (CR)	.020			.537
	Education→hedonic value	.005			.140
	Education→utilitarian value	.018			.561
	Gender→intrinsic motivation	-.039			-1.205
	Gender→extrinsic motivation	-.057			-1.855
	Gender→ value co-recovery behaviour (CR)	-.218			-5.677***

Gender→hedonic value	.011	.297
Gender→utilitarian value	-.020	-.578

Note: *** p < .001, ** p < .01, * p < .05

Table 5. Mediation effects

Parameter	Direct effects model	Mediation, direct effects	Mediation, indirect effects
Structural path		Standardized coefficients (*β)*	Significance (*p*-value)
AB➔extmotiv➔CR	.275***	.126**	.001**
AB➔intmotiv➔CR		.125**	.129

Note 1: ** p < .01.